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EXAMINER	
HICKS, CHARLES V	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,413	ENGEL ET AL.	
	Examiner	Art Unit	
	CHARLES HICKS	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/04/2008; 11/14/2008; 03/05/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 7-8, 11, 15-16, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Witehira et al. (US 6,906,762).

In reference to claim 1, Witehira teaches a display device comprising at least two display layers (Witehira, Fig. 3 layer 1 and layer 3; Fig. 4 layer 1, layer 13, layer 3)

at least in part overlapping (Witehira, Figs. 3, 4)

in which at least one of said display layers has a dissimilar configuration to the other display layer(s) such that moire interference is reduced (Witehira, col. 5 ll. 13-16; eliminating interference by a dissimilar configuration of pixels).

In reference to claim 2, Witehira teaches a display device comprising at least two display layers (Witehira, Fig. 3, layers 1 and 3)

which have tessellated pixel patterns (Witehira, Fig. 3; any regular pixel pattern which is repeated over the display layer, as in current specification page 2 paragraph 23)

and which are at least in part overlapping (Witehira, Figs. 3,4)

in which at least one of said display layers has a dissimilar pixel pattern to the other display layer(s) such that moire interference is reduced (Witehira, col. 5 ll. 13-16; using a stripe pixel pattern in one layer and a 45 degree diagonal pixel pattern on another layer).

Claims 7-8 are rejected as being dependent on rejected claim 1 as discussed above and further, Witehira teaches in which the overlap of like components, and group of components, and/or sub-components on different display layers is arranged such that each component, and group of components, and/or sub-component is overlapping a dissimilar component and/or sub-component (Witehira, col. 5 ll. 13-16; using a stripe pixel pattern in one layer and a 45 degree diagonal pixel pattern on another layer).

Claim 11 is rejected as being dependent on rejected claim 1 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3),

in which at least one interstitial layer is used between said display layers to assist in the reduction of moire interference (Witehira, Figs. 4, 13; col. 4 ll. 20-22).

Claims 15-16 are rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches in which the overlap of like components and/or sub-components on different display layers is arranged such that each component and/or sub-component is overlapping a dissimilar component and/or sub-component (Witehira, col. 5 ll. 13-16; using a stripe pixel pattern in one layer and a 45 degree diagonal pixel pattern on another layer).

Claim 19 is rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches a display device (Witehira Fig. 3),

in which at least one interstitial layer is used between said display layers to assist in the reduction of moire interference (Witehira, Figs. 4, 13; col. 4 ll. 20-22).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 9-10, 17-18, 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witehira et al. (US 6,906,762) in view of Jiang et al. (US 6,573,961).

In reference to claim 3, Witehira teaches a display device comprising at least two display layers (Witehira, Fig. 3, layer 1 and layer 3) which have tessellated pixel patterns (Witehira Fig. 3; any regular pixel pattern which is repeated over the display layer, as in current specification page 2 paragraph 23)

and which are at least in part overlapping (Witehira, Figs. 3, 4).

Witehira however fails to teach in which at least one of said display layers has a dissimilar sub-pixel pattern to the other display layer(s) such that moire interference is reduced.

Jiang discloses a display device comprising at least two layers, analogous in art with that of Witehira, wherein at least one of said display layers has a dissimilar sub-pixel pattern to the other display layer(s) such that moiré interference is reduced (Jiang, col. 49, ll. 7-17; Figs. 16b-16d).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Witehira such that at least one of said display layers has a dissimilar sub-pixel pattern to the other display layer(s), thus reducing moiré interference, as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to realize a display with improved image contrast between the colors of the layered display (Jiang col. 6, ll. 27-28).

Claim 9 is rejected as being dependent on rejected claim 1 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3).

Witehira however fails to teach in which said display layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s).

Jiang discloses a display device comprising at least two display layer(s), analogous in art with that of Witehira, wherein said display layer(s) have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s) (Jiang, Fig. 41; col. 58, ll. 31-35).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the layered display device of Witehira such that said display layers have components surrounded by black matrix and the overlap of black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s) as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to realize a display with an improvement in the color contrast of the layered display (Jiang, col. 58, ll. 40-44).

Claim 10 is rejected as being dependent on rejected claim 1 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3).

Witehira however fails to teach in which said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters.

Jiang discloses a display device comprising at least two display layers, analogous in art with that of Witehira, wherein said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters (Jiang, Fig. 1A, 18; col. 3 ll. 25-29).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Witehira such that the display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters, as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to realize a display

device with an improvement in the light transmission efficiency, and output brightness (Jiang, col. 3 ll. 34-39).

Claim 17 is rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3).

Witehira fails to teach in which said display layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s).

Jiang discloses a display device comprising at least two layers, analogous in art with that of Whitehira wherein said display layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s) (Jiang, Fig. 41; col. 58 ll. 31-35).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the layered display device of Witehira such that the display layers have components surrounded by black matrix and the overlap of said layers on different display layers is

arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s), as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to realize a display device with an improvement in the color contrast (Jiang, col. 58, ll. 40-44).

Claim 18 is rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3).

Witehira however fails to teach in which said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters.

Jiang discloses a display device comprising at least two display layers, analogous in art with that of Witehira, wherein said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters (Jiang, Fig. 1A, 18; col. 3 ll. 25-29).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the layered display device of Witehira such that the display layers use colour filters and the overlap of

like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters, as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to improve the light transmission efficiency, and output brightness, of the color filter groupings (Jiang col. 3 ll. 34-39).

Claims 20-21 are rejected as being dependent on rejected claim 3 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3),

in which the overlap of like components and/or sub-components on different display layers is arranged such that each component, and group of components, and/or sub-component is overlapping a dissimilar component and/or sub-component (Witehira, col. 5 ll. 13-16; using a stripe pixel pattern in one layer and a 45 degree diagonal pixel pattern on another layer).

Claim 22 is rejected as being dependent on rejected claim 3 as discussed above and further, Witehira however fails to teach in which said display layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such

that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s).

Jiang discloses a display device comprising at least two layers, analogous in art with that of Witehira, wherein layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s) (Jiang, Fig. 41; col. 58 ll. 31-35).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the layered display device of Witehira such that the layers have components surrounded by black matrix and the overlap of said black matrix on different display layers is arranged such that the pattern of black matrix on a layer is overlapping a dissimilar pattern of black matrix on the other layer(s), as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to realize a layered display device with an improvement in the color contrast (Jiang, col. 58 ll. 40-44).

Claim 23 is rejected as being dependent on rejected claim 3 as discussed above and further, Witehira however fails to teach in which said display layers use colour filters and the overlap of like colour filters on

different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters.

Jiang discloses a display device comprising at least two layers, analogous in art with that of Witehira, wherein said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters (Jiang, Fig. 1A, 18; col. 3 ll. 25-29).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the layered display device of Witehira such that said display layers use colour filters and the overlap of like colour filters on different display layers is arranged such that each group of colour filters is overlapped by a dissimilarly arranged group of colour filters as taught by Jiang.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to improve the light transmission efficiency, and output brightness, of the layered display panel (Jiang, col. 3 ll. 34-39).

Claim 24 is rejected as being dependent on rejected claim 3 as discussed above and further, Witehira teaches in which at least one

interstitial layer is used between said display layers to assist in the reduction of moire interference (Witehira, Fig. 4, 13; col. 4 ll. 20-22).

6. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witehira et al. (US 6,906,762) in view of Liang et al. (US 7,072,095).

Claims 4-5 are rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3),

with dissimilarity between pixels on different display layers (Witehira, col. 5 ll. 14-16; using a stripe pixel pattern in one layer and a 45 degree diagonal pixel pattern on another layer).

Witehira however fails to teach in which at least one of the borders of said pixels has (have) different curvature.

Liang '095 discloses a display device, analogous in art with that of Witehira, wherein at least one of the borders of said pixels has (have) different curvature (Liang '095, col. 7 ll. 18-31; cells can be of any shape and their sizes and shapes may vary, openings may be circular, square, rectangular, hexagonal, or any other shape).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the layered display devise of

Witehira such that at least one of the borders of said pixels has (have) different curvature, as taught by Liang '095.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been the ability to maximize the optical effects of high color saturation and the color contrast ratio of the layered display colors (Liang '095, col. 7 ll. 20-25).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witehira et al. (US 6,906,762) in view of Liang et al. (US 7,205,355).

Claim 6 is rejected as being dependent on rejected claim 2 as discussed above and further, Witehira teaches a display device (Witehira, Fig. 3),

with dissimilarity between unlike display layers (Witehira, col. 5 ll. 14-16).

Witehira however fails to teach at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another.

Liang '355 discloses a display device, analogous in art with that of Witehira, wherein at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another (Liang '355, col. 7 ll. 5-9).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the display devise of Witehira

such that the at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another, as taught by Liang '355.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to avoid the formation of the undesirable moire pattern in the layered display device (Liang '355, col. 7 ll. 6-7).

8. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witehira et al. (US 6,906,762) modified by Jiang et al. (US 6,573,961) in view of Liang (US 7,072,095).

Claims 12-13 are rejected as being dependent on rejected claim 3 as discussed above and further, Witehira modified by Jiang fails to teach in which the dissimilarity between pixels and sub-pixels on different display layers is that at least one of the borders of said pixels and sub-pixels has (have) different curvature.

Liang '095 discloses a display device, analogous in art with that of Witehira and Jiang, wherein the dissimilarity between pixels on different display layers is that at least one of the borders of said pixels and sub-pixels has (have) different curvature (Liang '095, col. 7 ll. 18-31; cells can be of any shape and their sizes and shapes may vary, openings may be circular, square, rectangular, hexagonal, or any other shape).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the display device of Witehira modified by Jiang, such that the dissimilarity between pixels on different display layers is that at least one of the borders of said pixels and sub-pixels has (have) different curvature, as taught by Liang '095.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been the ability to maximize the optical effects of high color saturation, and color contrast ratio, in a layered display (Liang '095, col. 7 ll. 20-25).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witehira et al. (US 6,906,762) modified by Jiang et al. (US 6,573,961) in view of Liang (US 7,205,355).

Claim 14 is rejected as being dependent on rejected claim 3 as discussed above and further, Witehira modified by Jiang fails to teach in which the dissimilarity between unlike display layers is that at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another.

Liang '355 discloses a display device, analogous in art with that of Witehira and Jiang, wherein the dissimilarity between unlike display layers

is that at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another (Liang '355, col. 7 ll. 5-9).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the layered display devise of Witehira modified by Jiang, such that the dissimilarity between unlike display layers is that at least one of the boundaries of the pixels and/or the sub-pixels are at an angle to one another as taught by Liang '355.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to avoid the formation of the undesirable moire pattern in a layered display device (Liang '355, col. 7 ll. 6-7).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matthies et al. (US 6,897,855) reads on a tiled electronic display.

Nakamura (US 2002/0075211) reads on a display apparatus and driving number.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES HICKS whose telephone number is 571-270-7535. The examiner can normally be reached on Monday-Thursday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629